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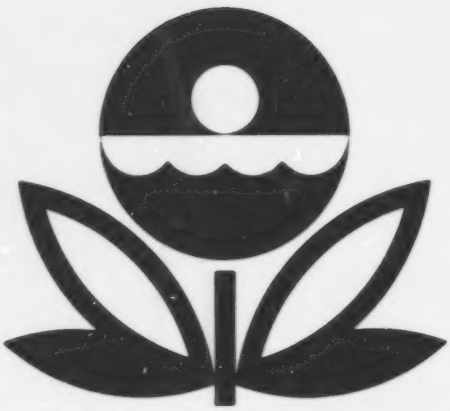

REPORT

ON

FALLEN LEAF LAKE

EL DORADO COUNTY

CALIFORNIA

EPA REGION IX

WORKING PAPER No. 746

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16. ABSTRACT

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

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REPORT
ON
FALLEN LEAF LAKE
EL DORADO COUNTY
CALIFORNIA
EPA REGION IX
WORKING PAPER No. 746

WITH THE COOPERATION OF THE
CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
AND THE
CALIFORNIA NATIONAL GUARD
JUNE, 1978

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentration (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGEMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U.S. Environmental Protection Agency) expresses sincere appreciation to the California State Water Resources Control Board and the nine Regional Water Quality Control Boards for professional involvement, to the California National Guard for conducting the tributary sampling phase of the Survey, and to those California wastewater treatment plant operators who voluntarily provided effluent samples and flow data.

The staff of the Division of Planning and Research of the State Water Resources Control Board provided invaluable lake documentation and counsel during the Survey, coordinated the reviews of the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

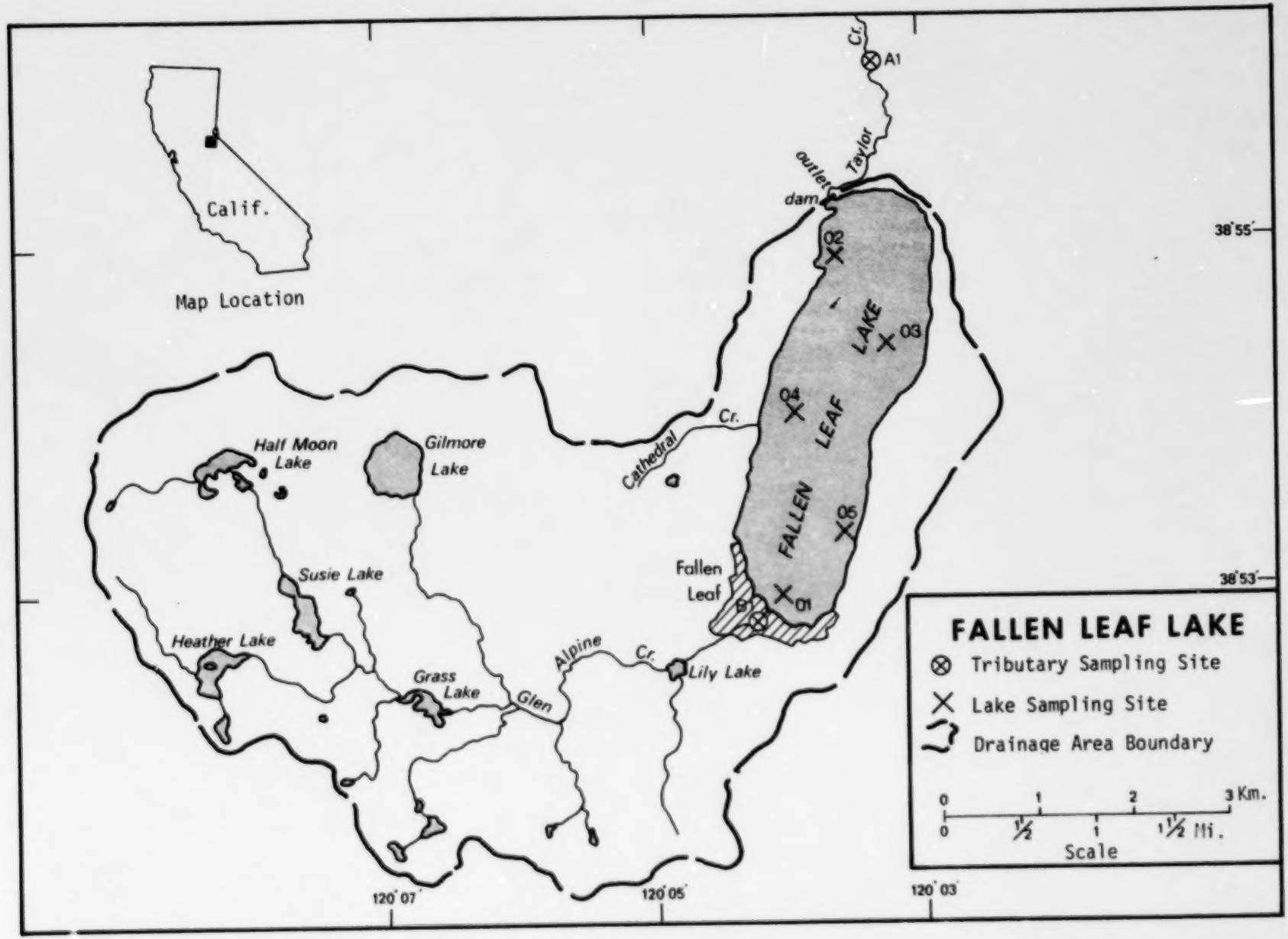
Major General Glen C. Ames, the Adjutant General of California, and Project Officer Second Lieutenant Terry L. Barrie, who directed the volunteer efforts of the California National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY RESERVOIRS

State of California

Name	County
Amador	Amador
Boca	Nevada
Britton	Shasta
Casitas	Ventura
Crowley	Mono
Don Pedro	Tuolumne
Elsinore	Riverside
Fallen Leaf	El Dorado
Hennessey	Napa
Henshaw	San Diego
Iron Gate	Siskiyou
Lopez	San Luis Obispo
Mary	Mono
Mendocino	Mendocino
Nicasio	Marin
Lower Otay	San Diego
Pillsbury	Lake
Santa Margarita	San Luis Obispo
Shasta	Shasta
Shaver	Fresno
Silver	Mono
Tahoe	El Dorado, Placer, CA; Carson City, Douglas, Washoe, NV
Tulloch	Calaveras, Tuolumne
Lower Twin	Mono
Upper Twin	Mono


Calif.
Map Location
Cr.
A1
outlet
Taylor
dam
38°55'
02
03
04
05
01
FALLEN LEAF LAKE
Cr.
Cathedral
Half Moon Lake
Gilmore Lake
Susie Lake
Fallen Leaf
38°53'
Heather Lake
Grass Lake
Glen
Alpine
Cr.
Lily Lake
120°07'
120°05'
120°03'
FALLEN LEAF LAKE
Tributary Sampling Site
Lake Sampling Site
Drainage Area Boundary
0 1 2 3 Km.
0 1/2 1 1 1/2 Mi.
Scale

FALLEN LEAF LAKE

STORET NO. 0608

I. CONCLUSIONS

A. Trophic Condition*:

Survey data indicate Fallen Leaf Lake is oligotrophic. It ranked second in overall trophic quality when the 24 California lakes and reservoirs sampled in 1975 were compared using a combination of six parameters**. None of the other water bodies had less median total phosphorus, seven had less median dissolved orthophosphorus, none of the others had less but four had the same median inorganic nitrogen, and none of the others had less chlorophyll a or greater mean Secchi disc transparency. No significant depression of dissolved oxygen with depth occurred at any of the sampling stations or times.

Survey limnologists did not observe macrophytes or surface concentrations of algae at any time.

B. Rate Limiting Nutrient:

Due to significant nutrient changes in the algal assay samples during shipment from the field to the laboratory, the results are not considered representative of conditions in the lake at the times the samples were taken.

The lake data indicate nitrogen limitation in March and June but pnosphorus limitation in November.

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* Trophic assessment is based on levels of nutrients, dissolved oxygen, and chlorophyll a; phytoplankton kinds and numbers; and transparency (Allum et al., 1977).

** See Appendix A.

C. Nutrient Controllability:

1. Point sources--No known municipal or industrial wastewater plants impacted Fallen Leaf Lake during the sampling year. Septic tanks serving lakeshore dwellings contributed an estimated 7.9% of the total phosphorus load, but a shoreline survey is needed to determine the significance of those sources.

The present phosphorus load of 0.11 $g/m^2/yr$ is less than that proposed by Vollenweider (Vollenweider and Dillon, 1974) as an oligotrophic load (see page 12) and every effort should be made to prevent any increase in phosphorus inputs to protect the existing high quality of Fallen Leaf Lake.

2. Non-point sources--Non-point sources, including direct precipitation, contributed 92.1% of the total phosphorus load reaching the lake during the sampling year. Glen Alpine Creek added 56.7% of the total load, and the ungaged tributaries contributed an estimated 19.7%.

The non-point phosphorus export rate of Glen Alpine Creek was 13 $kg/m^2/yr$ (see page 11).

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS†

A. Morphometry††:

1. Surface area: 5.71 kilometers^2.
2. Mean depth: 1.5 meters.
3. Maximum depth: > 68.6 meters.
4. Volume: 8.388 x 10^6 m^3.
5. Mean hydraulic retention time: 64 days.

B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

Name	Drainage area (km^2)*	Mean flow (m^3/sec)*
Glen Alpine Creek	28.0	1.037
Minor tributaries & immediate drainage -	9.6	0.473
Totals	37.6	1.510**

2. Outlet -

Taylor Creek	43.3**	1.510

C. Precipitation***:

1. Year of sampling: 43.1 centimeters.
2. Mean annual: 44.6 centimeters.

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† Table of metric equivalents--Appendix B.
†† Dendy, 1974.
* For limits of accuracy, see Working Paper No. 175, "... Survey Methods, 1973-1976".
** Includes area of lake; inflow adjusted to equal outflow.
*** See Working Paper No. 175.

III. WATER QUALITY SUMMARY

Fallen Leaf Lake was sampled three times during the open-water season of 1975 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from a number of depths at five stations in March and November and from four stations in June (see map, page v). During each visit, a single depth-integrated (4.6 m to surface) sample was composited from the stations for phytoplankton identification and enumeration; and during the first and last visits, a single 18.9-liter depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 59.7 meters at station 1, 21.3 meters at station 2, 68.6 meters at stations 3 and 4, and 61.0 meters at station 5.

The sampling results are presented in full in Appendix D and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR FALLEN LEAF RESERVOIR
STORET CODE 0608

	1ST SAMPLING (3/18/75) 5 SITES			2ND SAMPLING (6/27/75) 4 SITES			3RD SAMPLING (11/ 4/75) 5 SITES		
PARAMETER	RANGE	MEAN	MEDIAN	RANGE	MEAN	MEDIAN	RANGE	MEAN	MEDIAN
TEMP (C)	2.7 - 3.1	2.9	2.9	2.1 - 11.5	6.9	7.7	7.1 - 11.6	10.4	11.5
DISS OXY (MG/L)	9.8 - 10.4	10.0	10.0	6.2 - 10.4	9.2	9.0	8.6 - 10.0	9.2	9.0
CNDCTVY (MCROMO)	16. - 34.	23.	23.	10. - 25.	15.	13.	1. - 3.	1.	1.
PH (STAND UNITS)	6.7 - 8.2	7.4	7.5	7.3 - 8.4	7.6	7.5	7.0 - 7.6	7.2	7.1
TOT ALK (MG/L)	10. - 19.	13.	13.	13. - 17.	16.	16.	10. - 16.	11.	10.
TOT P (MG/L)	0.004 - 0.058	0.008	0.007	0.006 - 0.010	0.009	0.010	0.004 - 0.010	0.005	0.005
ORTHO P (MG/L)	0.002 - 0.016	0.008	0.010	0.002 - 0.012	0.005	0.005	0.002 - 0.008	0.002	0.002
NO2+NO3 (MG/L)	0.020 - 0.020	0.020	0.020	0.005 - 0.020	0.011	0.010	0.020 - 0.020	0.020	0.020
AMMONIA (MG/L)	0.020 - 0.050	0.022	0.020	0.010 - 0.050	0.018	0.015	0.020 - 0.020	0.020	0.020
KJEL N (MG/L)	0.200 - 0.400	0.226	0.200	0.050 - 0.200	0.084	0.050	0.200 - 0.200	0.200	0.200
INORG N (MG/L)	0.040 - 0.070	0.042	0.040	0.015 - 0.070	0.029	0.025	0.040 - 0.040	0.040	0.040
TOTAL N (MG/L)	0.220 - 0.420	0.246	0.220	0.055 - 0.220	0.096	0.060	0.220 - 0.220	0.220	0.220
CHLRPYL A (UG/L)	0.8 - 2.0	1.1	0.8	0.3 - 0.9	0.6	0.5	0.5 - 0.8	0.7	0.7
SECCHI (METERS)	0.9 - 10.7	8.2	10.4	6.1 - 15.2	13.0	15.2	15.2 - 15.2	15.2	15.2

B. Biological characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal Units per ml
03/18/75	1. Cryptomonas sp.	205
	2. Nitzschia sp.	160
	3. Dinobryon sp.	160
	4. Cyclotella sp.	114
	5. Chlamydomonas sp.	91
	Other genera	114
	Total	844
06/27/75	1. Synedra sp.	20
	2. Cyclotella sp.	10
	3. Dinobryon sp.	10
	Total	40
11/04/75	1. Chroomonas (?) sp.	43
	2. Dinoflagellate cysts	21
	Total	64

2. Chlorophyll a

Sampling Date	Station Number	Chlorophyll a (µg/l)
03/18/75	1	1.0
	2	2.0
	3	0.8
	4	0.8
	5	0.8
06/27/75	1	0.4
	2	0.3
	3	-
	4	0.7
	5	0.9
11/04/75	1	0.5
	2	0.8
	3	0.6
	4	0.7
	5	0.7

C. Limiting Nutrient Study:

Due to significant changes in nutrients in the samples, the algal assay results are not considered representative of conditions in the lake at the times the samples were collected (03/18/75 and 11/4/75).

Overall, the lake data indicate that Fallen Leaf Lake was nitrogen limited in March and June but phosphorus limited in November. The mean inorganic nitrogen to orthophosphorus ratios were 5 to 1 in March, 6 to 1 in June, and 20 to 1 in November.

Following is a tabulation of the mean N to P ratios for each station and sampling time, with indicated limiting nutrient in parentheses.

Station	03/18/75	06/27/75	11/14/75
1	10/1 (N)	5/1 (N)	20/1 (P)
2	13/1 (N-?)	7/1 (N)	10/1 (N)
3	4/1 (N)	-	20/1 (P)
4	3/1 (N)	5/1 (N)	20/1 (P)
5	4/1 (N)	5/1 (N)	20/1 (P)

IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the California National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff months of March, April, and June when two samples were collected at the outlet. Sampling was begun in November, 1974, and was completed in October, 1975.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the California District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. Nutrient loads for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the nutrient loads, in $kg/km^2/year$, at station B-1, and multiplying by the ZZ area in km^2.

No known wastewater treatment plants impacted Fallen Leaf Lake during the sampling year.

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* See Working Paper No. 175.

A. Waste Sources:

1. Known municipal - None

2. Known industrial - None

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/ yr	% of total
a. Tributaries (non-point load) -		
Glen Alpine Creek	360	56.7
b. Minor tributaries & immediate drainage (non-point load) -	125	19.7
c. Known municipal STP's - None	-	-
d. Septic tanks* -	50	7.9
e. Known industrial - None	-	-
f. Direct precipitation** -	100	15.7
Total	635	100.0

2. Outputs -

Lake outlet - Taylor Creek 510

3. Net annual P accumulation - 125 kg.

* Estimate based on 170 lakeshore dwellings; see Working Paper No. 175.
** See Working Paper No. 175.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/yr	% of total
a. Tributaries (non-point load) -		
Glen Alpine Creek	22,550	58.9
b. Minor tributaries & immediate drainage (non-point load) -	7,730	20.3
c. Known municipal STP's - None	-	-
d. Septic tanks* -	1,810	4.7
e. Known industrial - None	-	-
f. Direct precipitation** -	6,165	16.1
Total	38,255	100.0

2. Outputs -

Lake outlet - Taylor Creek 28,475

3. Net annual N accumulation - 9,780 kg.

D. Non-point Nutrient Export by Subdrainage Area:

Tributary	kg P/km^2/yr	kg N/km^2/yr
Glen Alpine Creek	13	805

* Estimate based on 170 lakeshore dwellings; see Working Paper No. 175.
** See Working Paper No. 175.

E. Yearly Loads:

In the following table, the existing phosphorus loadings are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Essentially, his "dangerous" loading is one at which the receiving water would become eutrophic or remain eutrophic; his "permissible" loading is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic loading would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
grams/m^2/yr	0.11	0.02	6.7	1.7

Vollenweider phosphorus loadings ($g/m^2/yr$) based on mean depth and mean hydraulic retention time of Fallen Leaf Lake:

"Dangerous" (eutrophic loading)	0.56
"Permissible" (oligotrophic loading)	0.28

V. LITERATURE REVIEWED

Allum, M.O., R.E. Glessner, and J.H. Gakstatter, 1977. An evaluation of the National Eutrophication Survey data. Working Paper No. 900, Corvallis Env. Res. Lab., Corvallis, OR.

Dendy, William B., 1974. Personal communication (waterbody information and morphometry). CA Water Res. Contr. Bd., Sacramento.

Vollenweider, R. A., and P. J. Dillon, 1974. The application of the phosphorus loading concept to eutrophication research. Natl. Res. Council of Canada Publ. No. 13690, Canada Centre for Inland Waters, Burlington, Ontario.

VI. APPENDICES

APPENDIX A

LAKE RANKINGS

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P
0601	AMADOR RESERVOIR	0.040	0.390	408.667	22.383	14.600	0.020
0602	BOCA LAKE	0.012	0.040	372.833	1.700	6.800	0.003
0603	LAKE BRITTON	0.067	0.115	446.500	4.811	11.200	0.047
0604	CASITAS RESERVOIR	0.029	0.050	400.250	3.192	14.000	0.014
0605	CROWLEY LAKE	0.046	0.045	374.750	5.800	12.200	0.034
0606	DON PEDRO RESERVOIR	0.013	0.060	381.733	3.564	11.400	0.004
0607	LAKE ELSINORE	0.469	0.120	489.214	70.572	8.000	0.092
0608	FALLEN LEAF RESERVOIR	0.007	0.040	24.357	0.786	8.800	0.005
0609	LAKE HENNESSEY	0.027	0.060	416.000	4.525	15.000	0.012
0610	LAKE HENSHAW	0.138	0.070	461.000	26.783	9.800	0.073
0611	IRON GATE RESERVOIR	0.184	0.690	440.333	6.217	13.800	0.124
0614	LOPEZ LAKE	0.371	0.090	372.000	8.658	15.000	0.343
0615	LAKE MARY	0.010	0.040	296.000	2.550	10.600	0.002
0616	LAKE MENDOCINO	0.020	0.050	436.500	3.100	9.400	0.008
0617	NICASIO RESERVOIR	0.055	0.345	482.778	6.633	9.800	0.013
0618	LOWER OTAY RESERVOIR	0.058	0.180	447.250	15.933	15.000	0.013
0619	LAKE PILLSBURY	0.022	0.060	466.667	6.389	8.200	0.008
0620	SANTA MARGARITA LAKE	0.037	0.070	400.000	9.122	14.800	0.014
0621	SHASTA LAKE	0.021	0.060	381.542	4.087	9.000	0.015
0622	SHAVER	0.014	0.060	346.400	1.700	7.400	0.004
0623	SILVER LAKE	0.012	0.055	356.000	1.800	7.000	0.003
0624	TULLOCK RESERVOIR	0.025	0.060	433.000	13.878	7.400	0.009
0625	UPPER TWIN LAKES	0.015	0.040	300.200	3.340	7.400	0.004
0626	LOWER TWIN LAKES	0.014	0.040	248.000	2.900	11.400	0.003

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
0601	AMADOR RESERVOIR	35 (8)	4 (1)	43 (10)	9 (2)	17 (4)	26 (6)	134
0602	BOCA LAKE	89 (20)	98 (22)	70 (16)	91 (21)	100 (23)	91 (20)	539
0603	LAKE BRITTON	17 (4)	22 (5)	17 (4)	48 (11)	43 (10)	17 (4)	164
0604	CASITAS RESERVOIR	43 (10)	74 (17)	48 (11)	70 (16)	22 (5)	37 (8)	294
0605	CROWLEY LAKE	30 (7)	78 (18)	65 (15)	43 (10)	30 (7)	22 (5)	268
0606	DON PEDRO RESERVOIR	83 (19)	54 (11)	57 (13)	61 (14)	37 (8)	78 (17)	370
0607	LAKE ELSINORE	0 (0)	17 (4)	0 (0)	0 (0)	78 (18)	9 (2)	104
0608	FALLEN LEAF RESERVOIR	100 (23)	87 (19)	100 (23)	100 (23)	70 (16)	70 (16)	527
0609	LAKE HENNESSEY	48 (11)	54 (11)	39 (9)	52 (12)	4 (0)	52 (12)	249
0610	LAKE HENSHAW	13 (3)	33 (7)	13 (3)	4 (1)	54 (12)	13 (3)	130
0611	IRON GATE RESERVOIR	9 (2)	0 (0)	26 (6)	39 (9)	26 (6)	4 (1)	104
0614	LOPEZ LAKE	4 (1)	26 (6)	74 (17)	26 (6)	4 (0)	0 (0)	134
0615	LAKE MARY	96 (22)	87 (19)	91 (21)	83 (19)	48 (11)	100 (23)	505
0616	LAKE MENDOCINO	65 (15)	70 (16)	30 (7)	74 (17)	61 (14)	63 (14)	363
0617	NICASIO RESERVOIR	26 (6)	9 (2)	4 (1)	30 (7)	54 (12)	46 (10)	169
0618	LOWER OTAY RESERVOIR	22 (5)	13 (3)	22 (5)	13 (3)	4 (0)	46 (10)	120
0619	LAKE PILLSBURY	57 (13)	41 (9)	9 (2)	35 (8)	74 (17)	63 (14)	279
0620	SANTA MARGARITA LAKE	39 (9)	33 (7)	52 (12)	22 (5)	13 (3)	37 (8)	196
0621	SHASTA LAKE	61 (14)	54 (11)	61 (14)	57 (13)	65 (15)	30 (7)	328
0622	SHAVER	78 (18)	41 (9)	83 (19)	96 (22)	87 (19)	78 (17)	463
0623	SILVER LAKE	89 (20)	65 (15)	78 (18)	87 (20)	96 (22)	91 (20)	506
0624	TULLOCK RESERVOIR	52 (12)	54 (11)	35 (8)	17 (4)	87 (19)	57 (13)	302
0625	UPPER TWIN LAKES	70 (16)	98 (22)	87 (20)	65 (15)	87 (19)	78 (17)	485
0626	LOWER TWIN LAKES	74 (17)	87 (19)	96 (22)	78 (18)	37 (8)	91 (20)	463

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	0602	BOCA LAKE	539
2	0608	FALLEN LEAF RESERVOIR	527
3	0623	SILVER LAKE	506
4	0615	LAKE MARY	505
5	0625	UPPER TWIN LAKES	485
6	0626	LOWER TWIN LAKES	463
7	0622	SHAVER	463
8	0606	DON PEDRO RESERVOIR	370
9	0616	LAKE MENDOCINO	363
10	0621	SHASTA LAKE	328
11	0624	TULLOCK RESERVOIR	302
12	0604	CASITAS RESERVOIR	294
13	0619	LAKE PILLSBURY	279
14	0605	CROWLEY LAKE	268
15	0609	LAKE HENNESSEY	249
16	0620	SANTA MARGARITA LAKE	196
17	0617	NICASIO RESERVOIR	169
18	0603	LAKE BRITTON	164
19	0614	LOPEZ LAKE	134
20	0601	AMADOR RESERVOIR	134
21	0610	LAKE HENSHAW	130
22	0618	LOWER OTAY RESERVOIR	120
23	0607	LAKE ELSINORE	104
24	0611	IRON GATE RESERVOIR	104

APPENDIX B

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107 x 10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 - cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX C

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR CALIFORNIA 09/24/76

LAKE CODE 0608 FALLEN LEAF LAKE

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 43.3

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
0608A1	43.3	2.01	0.93	0.93	1.47	4.47	3.94	1.02	0.28	0.19	0.28	1.16	1.33	1.51
0608B1	28.0	0.538	0.255	0.481	1.019	4.361	3.710	0.623	0.255	0.127	0.139	0.099	0.793	1.037
0608ZZ	9.6	0.176	0.088	0.167	0.340	1.501	1.246	0.212	0.088	0.045	0.048	0.034	0.266	0.352

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 43.3
SUM OF SUB-DRAINAGE AREAS = 37.6
TOTAL FLOW IN = 16.61
TOTAL FLOW OUT = 18.03

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0608A1	11	74	0.142	9	0.147				
	12	74	0.164	8	0.193				
	1	75	0.311	12	0.425				
	2	75	0.651						
	3	75	0.736	8	0.623	19	0.680		
	4	75	0.651	11	0.651	27	0.595		
	5	75	3.681	10	1.331				
	6	75	5.210	22	3.143	19	4.304		
	7	75	1.246	29	0.153				
	8	75	0.170	9	0.125	21	0.210		
	9	75	0.193						
	10	75	1.133						
0608B1	11	74	0.034	9	0.023				
	12	74	0.085						
	1	75	0.085						
	2	75	0.091						
	3	75	0.176						
	4	75	0.215						
	5	75	3.625	10	0.0	30	7.221		
	6	75	5.607	22	4.814				
	7	75	1.076	20	0.623				
	8	75	0.340	9	0.311	21	0.425		
	9	75	0.156						
	10	75	0.396						
0608ZZ	11	74	0.011						
	12	74	0.028						
	1	75	0.028						
	2	75	0.031						
	3	75	0.059						
	4	75	0.074						
	5	75	1.246						
	6	75	1.897						
	7	75	0.368						
	8	75	0.116						
	9	75	0.054						
	10	75	0.136						

APPENDIX D

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 76/09/24

060801
38 52 55.0 120 04 03.0 3
FALLEN LEAF RESERVOIR
06017 CALIFORNIA
150191

11EPALES 2111202
0200 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
75/03/18	09	30 0000	2.7	10.0	420	16	7.50	15	0.020	0.300	0.020K	0.004
	09	30 0005	2.7	10.0		17	7.20	10	0.020K	0.200K	0.020K	0.003
	09	30 0020	2.7	10.0		17	6.80	11	0.020K	0.200K	0.020K	0.005
	09	30 0050	2.7	9.8		17	6.70	11	0.020K	0.200K	0.020K	0.003
	09	30 0080	2.7	10.0		17	6.80	12	0.020K	0.200K	0.020K	0.004
	09	30 0110	2.7	9.9		17	6.90	12	0.020K	0.200K	0.020K	0.004
	09	30 0140	2.7	9.9		18	6.85	11	0.020K	0.200K	0.020K	0.004
	09	30 0170	2.7	9.9		16	6.90	12	0.020K	0.200K	0.020K	0.004
	09	30 0196	2.8	9.8		18	7.00	12	0.020K	0.200K	0.020K	0.004
75/06/27	12	45 0000	9.4	8.0	600	22	7.90		0.020	0.050	0.010	0.005K
	12	45 0005	9.1	8.8		15	8.10		0.025	0.050K	0.010	0.005K
	12	45 0015	8.4	8.6		13	7.90		0.020K	0.050K	0.010	0.005K
	12	45 0035	7.9	9.0		12	7.80		0.025	0.050K	0.010	0.005K
	12	45 0065	6.2	9.8		11	7.70		0.015	0.050K	0.005	0.005K
	12	45 0085	3.6	10.0		11	7.65		0.010	0.050K	0.005	0.005K
	12	45 0126	2.5	10.0		14	7.60		0.015J	0.050K	0.010	0.005K
75/11/04	10	20 0000	11.4	8.8	600	1K	7.65	10K	0.020K	0.200K	0.020K	0.002K
	10	20 0005	11.4	9.4		1K	7.60	10K	0.020K	0.200K	0.020K	0.002
	10	20 0025	11.5	9.0		1K	7.50	10K	0.020K	0.200K	0.020K	0.002K
	10	20 0060	11.4	8.8		1K	7.50	10	0.020K	0.200K	0.020K	0.002K
	10	20 0100	9.4	9.8		1K	7.40	13	0.020K	0.200K	0.020K	0.002K
	10	20 0135	8.0	10.0		1K	7.30	16	0.020K	0.200K	0.020K	0.002K
	10	20 0170	7.7	9.4		1K	7.30	16	0.020K	0.200K	0.020K	0.002K

K= VALUE KNOWN TO BE LESS THAN INDICATED

J= VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 76/09/24

060801
38 52 55.0 120 04 03.0 3
FALLEN LEAF RESERVOIR
06017 CALIFORNIA
150191

11EPALES 2111202
0200 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
75/03/18	09 30	0000	0.007	1.0	
	09 30	0005	0.005		
	09 30	0020	0.005		
	09 30	0050	0.004		
	09 30	0080	0.004		
	09 30	0110	0.004		
	09 30	0140	0.005		
	09 30	0170	0.004		
	09 30	0196	0.006		
75/06/27	12 45	0000	0.010K	0.4	
	12 45	0005	0.010K		
	12 45	0015	0.010		
	12 45	0035	0.010K		
	12 45	0065	0.010K		
	12 45	0085	0.010K		
	12 45	0126	0.010K		
75/11/04	10 20	0000	0.004	0.5	
	10 20	0005	0.005		
	10 20	0025	0.005		
	10 20	0060	0.005		
	10 20	0100	0.005		
	10 20	0135	0.005		
	10 20	0170	0.005		

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/24

060802
38 54 55.0 120 03 40.0 3
FALLEN LEAF RESERVOIR
06017 CALIFORNIA
150191

11EPALES 2111202
0066 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
75/03/24	09 30	0000	3.1	10.0	35	27	6.95	16	0.050	0.400	0.020K	0.006
	09 30	0005	3.1	10.0		23	7.15	14	0.030	0.300	0.020K	0.004
	09 30	0020	3.1	10.2		24	7.15	15	0.030	0.200K	0.020K	0.003
	09 30	0040	3.1	10.0		23	7.30	14	0.030	0.200K	0.020K	0.003
	09 30	0062	3.0	10.2		24	7.40	14	0.020	0.200K	0.020K	0.002
75/07/02	12 25	0000	11.5	8.4	240	25	7.75	13	0.030	0.200	0.020K	0.008K
	12 25	0005	11.3	8.6		21	7.70	15	0.050	0.200K	0.020	0.012K
	12 25	0030	10.4	8.6		20	7.60	16	0.020	0.200K	0.020K	0.008
	12 25	0040	9.7	9.2		19	7.50	17	0.030	0.200K	0.020K	0.008K
	12 25	0060	6.9	8.8		17	7.50	15	0.020K	0.200K	0.020K	0.002K
	12 25	0070	6.4	10.0		25	8.40	17	0.030	0.200K	0.020K	0.002K
75/11/05	08 40	0000	11.5	8.6	600	3	7.10	10K	0.020K	0.200K	0.020K	0.003
	08 40	0005	11.6	9.2		1	7.10	10K	0.020K	0.200	0.020K	0.008
	08 40	0015	11.6	9.0		1	7.10	10K	0.020K	0.200K	0.020K	0.004
	08 40	0030	11.6	8.8		1	7.10	10K	0.020K	0.200K	0.020K	0.003
	08 40	0052	11.6	9.0		1	7.10	10K	0.020K	0.200	0.020K	0.002

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
75/03/24	09 30	0000	0.011	2.0	
	09 30	0005	0.007		
	09 30	0020	0.008		
	09 30	0040	0.007		
	09 30	0062	0.007		
75/07/02	12 25	0000	0.006	0.3	
	12 25	0005	0.009		
	12 25	0030	0.007		
	12 25	0040	0.007		
	12 25	0060	0.006		
	12 25	0070	0.006		
75/11/05	08 40	0000	0.010	0.8	
	08 40	0005	0.007		
	08 40	0015	0.004		
	08 40	0030	0.004		
	08 40	0052	0.004		

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/24

060803
38 54 23.0 120 03 14.0 3
FALLEN LEAF RESERVOIR
06017 CALIFORNIA

150191

11EPALES 2111202
0999 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
75/03/24	09 25	0000	2.8	10.0	336	24	7.80	12	0.030	0.400	0.020K	0.014K
	09 25	0005	2.8			22	7.50	10K	0.020K	0.200	0.020K	0.010K
	09 25	0025	2.8	10.4		22	8.20	10	0.020K	0.200K	0.020K	0.010K
	09 25	0075	2.8	10.0		27	8.00	12	0.020K	0.200K	0.020K	0.010K
	09 25	0125	2.8	10.0		24	7.60	13	0.020K	0.200K	0.020K	0.011K
	09 25	0175	2.9	10.0		22	8.00	14	0.020K	0.200K	0.020K	0.010K
	09 25	0225	2.9	10.4		24	7.50	13	0.020K	0.200K	0.020K	0.012K
75/11/05	09 00	0000	11.6	8.8	600	1	7.00	10K	0.020K	0.200K	0.020K	0.002
	09 00	0005	11.6	8.8		1	7.10	10K	0.020K	0.200K	0.020K	0.002
	09 00	0020	11.6	9.0		1	7.15	10K	0.020K	0.200K	0.020K	0.002K
	09 00	0060	11.6	9.0		1K	7.20	10	0.020K	0.200K	0.020K	0.002
	09 00	0105	10.2	9.2		1K	7.10	10K	0.020K	0.200K	0.020K	0.002K
	09 00	0140	7.9	9.8		1	7.10	10	0.020K	0.200K	0.020K	0.002K
	09 00	0175	7.7	10.0		1	7.00	12	0.020K	0.200K	0.020K	0.002K

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
75/03/24	09 25	0000	0.014	0.8	
	09 25	0005	0.007		
	09 25	0025	0.007		
	09 25	0075	0.007		
	09 25	0125	0.007		
	09 25	0175	0.007		
	09 25	0225	0.008		
75/11/05	09 00	0000	0.005	0.6	
	09 00	0005	0.005		
	09 00	0020	0.004		
	09 00	0060	0.005		
	09 00	0105	0.004		
	09 00	0140	0.006		
	09 00	0175	0.004		

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/24

060804
38 54 00.0 120 03 59.0 3
FALLEN LEAF RESERVOIR
06017 CALIFORNIA 150191

11EPALES 2111202
0994 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
75/03/24	12 30	0000	3.0	10.0	408	25	7.90	13	0.020K	0.200K	0.020K	0.011K
	12 30	0005	3.0	10.2		26	7.70	16	0.020K	0.200K	0.020K	0.016K
	12 30	0025	3.0	10.2		34	7.50	15	0.020K	0.200K	0.020K	0.010K
	12 30	0075	3.0	10.0		28	7.20	16	0.020K	0.200K	0.020K	0.010K
	12 30	0125	3.0	10.0		29	7.70	17	0.020K	0.200K	0.020K	0.010K
	12 30	0175	3.1	10.0		24	7.80	19	0.020K	0.200K	0.020K	0.015K
	12 30	0225	3.1	10.0		24	7.90	18	0.020K	0.200K	0.020K	0.011K
75/06/27	14 15	0000	9.7	8.4	600	17	7.55		0.020J	0.050J	0.010	0.005K
	14 15	0005	9.6	8.6		16	7.50		0.020	0.050K	0.010	0.005K
	14 15	0020	9.5	9.2		15	7.50		0.020	0.050K	0.010	0.005K
	14 15	0050	7.7	8.8		12	7.50		0.010	0.050K	0.010	0.005K
	14 15	0070	4.8	10.4		11	7.40		0.010	0.050K	0.010	0.005K
	14 15	0110	3.8	6.2		11	7.40		0.015	0.050	0.005	0.005K
	14 15	0150	2.8	10.0		10	7.40		0.010	0.050K	0.005	0.005K
	14 15	0210	2.4	10.4		12	7.30		0.010	0.050K	0.005	0.005K
75/11/05	09 30	0000	11.5	9.0	600	1	7.15	10	0.020K	0.200K	0.020K	0.002K
	09 30	0005	11.6	8.8		1K	7.20	10	0.020K	0.200K	0.020K	0.002K
	09 30	0025	11.6	9.0		1K	7.15	11	0.020K	0.200K	0.020K	0.002K
	09 30	0060	11.5	8.8		1K	7.20	10	0.020K	0.200K	0.020K	0.002K
	09 30	0105	10.1	9.8		1K	7.10	10	0.020K	0.200K	0.020K	0.002K
	09 30	0140	8.0	9.8		1	7.10	10	0.020K	0.200K	0.020K	0.002K
	09 30	0175	7.8	9.8		1	7.00	10K	0.020K	0.200K	0.020K	0.002

K= VALUE KNOWN TO BE LESS THAN INDICATED

J= VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 76/09/24

060804
38 54 00.0 120 03 59.0 3
FALLEN LEAF RESERVOIR
06017 CALIFORNIA
150191

11EPALES 2111202
0999 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
75/03/24	12	30 0000	0.009	0.8	
	12	30 0005	0.006		
	12	30 0025	0.007		
	12	30 0075	0.007		
	12	30 0125	0.006		
	12	30 0175	0.009		
	12	30 0225	0.007		
75/06/27	14	15 0000	0.010K	0.7	
	14	15 0005	0.010K		
	14	15 0020	0.010K		
	14	15 0050	0.010K		
	14	15 0070	0.010K		
	14	15 0110	0.010K		
	14	15 0150	0.010K		
	14	15 0210	0.010K		
75/11/05	09	30 0000	0.005	0.7	
	09	30 0005	0.006		
	09	30 0025	0.006		
	09	30 0060	0.004		
	09	30 0105	0.006		
	09	30 0140	0.004		
	09	30 0175	0.004		

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/24

060405
38 53 20.0 120 03 40.0 3
FALLEN LEAF RESERVOIR
06017 CALIFORNIA
150191

11EPALES 2111202
0195 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
75/03/24	13 10	0000	2.9	10.2	420	25	7.50	19	0.020K	0.300	0.020K	0.012K
	13 10	0005	2.9	10.0		23	8.00	14	0.030	0.200K	0.020K	0.013K
	13 10	0025	2.8	10.0		23	7.20	13	0.020K	0.200K	0.020K	0.012K
	13 10	0050	2.9	10.0		23	7.60	14	0.020K	0.200K	0.020K	0.013K
	13 10	0090	2.9	10.0		22	7.20	13	0.020K	0.200K	0.020K	0.011K
	13 10	0140	3.0	9.8		26	8.20	10	0.020K	0.200K	0.020K	0.010J
	13 10	0190	3.0	10.0		23	7.90	10K	0.020K	0.400	0.020K	0.012J
75/06/27	13 30	0000	9.5	8.6	600	18	7.40		0.025	0.150	0.015	0.005K
	13 30	0005	9.6	8.6		15	7.40		0.010	0.050K	0.005	0.005K
	13 30	0015	9.5	8.6		13	7.40		0.010	0.050K	0.010	0.005K
	13 30	0040	7.6	9.4		11	7.40		0.010	0.050K	0.010	0.005K
	13 30	0070	3.7	10.0		10	7.35		0.010	0.050K	0.010	0.005K
	13 30	0110	2.8	10.4		10	7.30		0.010	0.050K	0.010	0.005K
	13 30	0155	2.4	9.8		12	7.30		0.015	0.050K	0.010	0.005K
	13 30	0200	2.1	10.4		13	7.30		0.010	0.050K	0.010	0.005K
75/11/05	09 55	0000	11.4	9.0	600	1	7.30	10K	0.020K	0.200K	0.020K	0.002
	09 55	0005	11.5	8.8		1	7.30	10K	0.020K	0.200K	0.020K	0.002
	09 55	0025	11.5	8.8		1K	7.25	10K	0.020K	0.200K	0.020K	0.002K
	09 55	0060	11.5	9.0		1K	7.30	10K	0.020K	0.200K	0.020K	0.002K
	09 55	0100	10.1	9.2		1K	7.25	10K	0.020K	0.200K	0.020K	0.002K
	09 55	0155	8.2	9.8		1	7.20	10K	0.020K	0.200K	0.020K	0.002K
	09 55	0170	7.1	9.8		1	7.10	10K	0.020K	0.200K	0.020K	0.002K

K= VALUE KNOWN TO BE LESS THAN INDICATED

J= VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 76/09/24

060805
38 53 20.0 120 03 40.0 3
FALLEN LEAF RESERVOIR
06017 CALIFORNIA
150191

11EPALES 2111202
0195 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
75/03/24	13 10	0000	0.007	0.8	
	13 10	0005	0.008		
	13 10	0025	0.006		
	13 10	0050	0.006		
	13 10	0090	0.006		
	13 10	0140	0.011		
	13 10	0190	0.05R		
75/06/27	13 30	0000	0.010K	0.9	
	13 30	0005	0.010K		
	13 30	0015	0.010K		
	13 30	0040	0.010K		
	13 30	0070	0.010K		
	13 30	0110	0.010K		
	13 30	0155	0.010K		
	13 30	0200	0.010K		
75/11/05	09 55	0000	0.004	0.7	
	09 55	0005	0.004		
	09 55	0025	0.006		
	09 55	0060	0.004		
	09 55	0100	0.005		
	09 55	0155	0.005		
	09 55	0170	0.004		

K VALUE KNOWN TO BE
LESS THAN INDICATED

APPENDIX E

TRIBUTARY DATA

STORET RETRIEVAL DATE 76/09/24

0608A1
38 56 00.0 120 03 20.0 4
TAYLOR CREEK
06 7.5 EMERALD BAY
O/FALLEN LEAF LAKE 150191
HWY 89 BRDG .5 MI S OF KIVA BEACH
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
74/11/09	12	48	0.032	0.200	0.040	0.015	0.015
74/12/08	11	35	0.040	0.600	0.040	0.006	0.015
75/01/12	10	00	0.024	0.200	0.012	0.007	0.010K
75/03/08	10	00	0.015	0.400	0.008	0.008K	0.010K
75/03/19	16	10	0.005	0.400	0.080	0.005K	0.010K
75/04/11	11	00	0.010	1.050	0.015	0.005K	0.010K
75/04/27			0.015	0.600	0.020	0.005K	0.030
75/05/10			0.010	0.900	0.040	0.015	0.015
75/06/19	11	00	0.005	0.550	0.015	0.005K	0.040
75/06/22	13	00	0.070	0.350	0.015	0.010	0.010
75/07/29	16	00	0.650	0.300	0.020		
75/08/09			0.020	0.050	0.015	0.005K	0.010K
75/08/21			0.015	0.500	0.165	0.005K	0.010K
75/10/21			0.015	0.300	0.011	0.005K	0.010K

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/09/24

060881
38 52 50.0 120 04 10.0 4
GLEN ALPINE CREEK
06 7.5 EMERALD BAY
T/FALLEN LEAF LAKE 150191
SEC RD BRDG .3 MI S OF FALLEN LEAF
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
74/11/09	12 07		0.032	1.200	0.030	0.005	0.010K
75/05/30	12 00		0.010	0.150	0.035	0.005K	0.010
75/06/22	13 00		0.095	2.400	0.050	0.005	0.010K
75/07/20	13 10		0.015	0.190	0.010	0.005K	0.020
75/08/09			0.015	0.050K	0.010	0.005K	0.010K
75/08/21			0.025	0.500	0.020	0.005K	0.010
75/10/21			0.010	0.200	0.010	0.005K	0.010K

K VALUE KNOWN TO BE
LESS THAN INDICATED